

REMARKS

Claims 22-24 are in the application. No claim is allowed. The title and abstract of application have been amended. The status of the parent application has been provided on page 1 of the specification.

Claims 20-24 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being incomplete for omitting essential structural cooperative relationships of elements, specifically of the element the heater. Claim 20 has now been amended to indicate that the heater is located at the distal end within the housing. Accordingly, withdrawal of this rejection is requested.

Claims 20-22, and 24 are rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Antal Jr., et al. ("Antal,"reference H) in view of Bergman (reference N), both of record. Reconsideration and withdrawal of this rejection are respectfully requested.

The Examiner primarily relies upon the reactor shown in Figure 2 of Antal. However, as discussed in Antal, that apparatus is not designed to have an input of air while the reactor is being used. In Antal, the biomass is simply sealed within the reactor and all the air or oxygen used for the combustion is sealed within the reactor at that time. The input of nitrogen has nothing to do with the combustion process. It is only used at the end to purge the interior of the reactor. See Antal, page 654, right column, lines 14-15 following Table 1. In fact, there is no input of air at all into the reactor in Antal once the reactor is sealed. Even assuming that the nitrogen tank in Antal is replaced with an air or oxygen tank, a modification for which there is no motivation in the reference, the air would still be entering at the distal end not at the proximal end. Therefore, *a priori* there is no way for Antal to "introduce air at the proximal end of the canister through a valved air entry orifice" given that the heater is at the distal end. The entry of the air from the end opposite from the location of the heater is important as set forth in the present specification on page 6, beginning at the penultimate line. The flow of gas from the proximal end to the distal end of the reactor causes it to operate in a downdraft mode as the air flows down through the bed, the flame front beginning at the heater in the distal end moves upward. The operation in this downdraft mode is not possible in the apparatus of Antal. The addition of Bergman does not remedy this deficiency. The Examiner relies on Bergman merely to show the presence of insulation. However, even in Bergman the air is introduced at the distal end via compressor 2 and passes through the heaters 12, also located at the distal end. There is no downdraft through the bed of materials within the reactor.

Accordingly, it is submitted that the present claims are unobvious over the combination of references and withdrawal of the rejection is respectfully respected.

Claim 23 is rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Antal in view of Bergman further in view of Koppelman (reference A). The Examiner cites Koppelman to teach that preheating an inert gas feed results in reduction of overall operation time. The Examiner therefore submits that it would have been obvious to extend the feed line in Antal, presumably line 5 of Figure 2 as provided by the Examiner, into the canister so that the heat of operation would preheat the nitrogen feed to achieve reductions in operation time. This rejection is respectively traversed. First of all, Koppelman does not teach how far into the reactor one should extend line 5. Should it be part way into the reactor? Should it be all the way to the other end of the reactor? Only by extending line 5 substantially to the top of the reactor would the required downflow be achieved, but that is not taught by Koppelman. Secondly, preheating of the air is not the primary reason applicants use stand pipe 29 (Fig. 1). It is rather for the purpose discussed above, that is, to introduce the air to the top of the canister so that the air moves in downdraft mode through the bed as the flame moves upward. This is not taught by Koppelman. Lastly, the Examiner appears to be of the impression that introduction of preheated nitrogen would achieve reductions in operation time, since Antal teaches the use of nitrogen. However, the apparatus of the invention recites a valved air entry or orifice, not a nitrogen entry orifice, since nitrogen would be of little or no value for using the reactor for its intended purpose. Accordingly, it is submitted that claim 23 is unobvious over the combination of references and withdrawal of the rejection is respectfully requested.

For the foregoing reasons it is submitted that the application is in condition for allowance and a prompt issuance is respectfully requested.

Respectfully submitted,
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